REMARKS

These remarks follow the order of the outstanding Office Action beginning at page 2 thereof.

Priority

The Examiner has noted that Applicant has claimed the right for priority and has stated that Applicant has not filed a certified copy of the priority document as required by 35 USC § 119(b). However, Applicant respectfully requests the Examiner to note that this application was filed under the provisions of the Patent Cooperation Treaty. Applicant has claimed no prior Japanese application. Applicant's earliest filing date is the date of the PCT application. Applicant is entitled to this date in the US under the provisions of the Patent Cooperation Treaty.

Claim Objections

Applicant has reviewed the claim objections and made appropriate corrections in claims 1 and 3 as suggested by the Examiner. Original claims 1 and 3 have now been combined to form new claim 1. The words "a resultant as" have also been removed from original claim 3 to make the claim clear.

Claim Rejections - 35 USC § 102

The rejection of claims 1 - 3 under 3 USC § 102(b) as being anticipated by or obvious over Klemola '422 is overcome by inclusion of limitations of claim 3 into claim 1 and traversal of the rejection of original claim 3. All claims dependent from claim 1 will be allowable upon allowance of claim 1. The rejection of original claim 3 is traversed.

35 USC § 103

The Examiner has further contended that claims 1 -3 would be obvious in view of '422. It is respectfully submitted that the teaching of the extraction at pressures and temperatures above the critical pressure simply do not teach the claimed vapor phase, nor do they suggest it. If anything, '422 would be a teaching away from applicant's claimed invention. In Applicant's invention of original claim 3 (now claim 1), the fragrance ingredient is collected in an absorption solvent. To obtain a <u>fragrance collection liquid</u>. The fragrance collection liquid may be methanol, etc. An inert gas (CO_2) plays a role in that it introduces the fragrance ingredient into a collection apparatus while inhibiting the oxidation of the fragrance ingredient.

In US Patent 4,847,422, the fragrance ingredient is not obtained as a fragrance collection liquid.

	Transport medium	Absorption Medium
Present Invention	Gas state CO_2	Liquid state (methanol etc.) in collection apparatus
US Pat 4,847,422	—	Supercritical state CO_2 (Pressure: 75 to 400 bar, Temperature 30 to 100° C

Original Claim 1

'422 teaches extraction of vanillin from the oxidized liquor by means of over pressurized carbon dioxide. The specification at column 2 beginning at line 4 states:

"Supercritical extraction means a procedure wherein the extracting agent is, in the gaseous form, above the critical pressure and temperature thereof. Such extraction can be carried out by means of various agents, though carbon dioxide, the critical pressure of which is 73.8 bars and the critical temperature 31°C., has become most popular, being inert, nontoxic, uninflammable and easy to handle."

In Applicant's claim 1, Applicant claims that there is extracting an essential oil . . . and collecting the fragrance ingredient in vapor-phase by heating the extract.

The definition of "vapor" is found in the dictionary as being a gas whose temperature is less than the critical temperature so that it may be liquified or solidified by compensation at constant temperature (see attached dictionary definition, page 2315). On the other hand, the term "critical pressure" as referred to in '422

is the pressure associated with the <u>critical point</u> of the liquid-vapor stat of a substance; i.e., the pressure of the substance at its critical temperature (see attached dictionary definition, page 547 and attached phase diagram of CO_2).

The critical pressure is also defined as pressure of a vapor at its critical point, i.e., the point at which the liquid phase and the vapor phase become identical. When the definition of vapor is read in combination with critical temperature, it is seen that a vapor is a gas whose temperature is less than the critical temperature. On the other hand, '422 teaches that the supercritical extraction means a procedure wherein the extracting agent in the gaseous form is above the critical pressure and temperature thereof. This, therefore, cannot mean in the gaseous state.

The attached phase diagram of CO_2 agrees with the critical temperature of 31°C and critical pressure of 73.8 bars disclosed in Klemola. Above the critical point, Klemola cannot have a vapor. On the other hand, Applicant claims a vapor in claim 1. Therefore, Applicant's claim 1 lies below the critical temperature and pressure while Klemola carbon dioxide lies above the critical temperature and pressure as shown.

In Applicant's specification, Applicant also teaches that the apparatus for practicing Applicant's invention includes a Clausen flask type distillation apparatus (see paragraph [0034]). It is clear that this type of apparatus simply cannot withstand the kind of pressures referred to in '422. The pressure in '422 is at least

73.8 bars.   A bar is known to be approximately 1 atmosphere.

Therefore, 73.8 x 14.7 would yield 1,084 pounds per square inch.

This type of pressure is clearly not contemplated by the apparatus

shown in Applicant's specification. On the other hand, this is the

minimum pressure taught by '422.

In the outstanding Office Action the Examiner at page 3, line

4 states that supercritical pressure and temperature are vapor

phase. This simply does not agree with the definition of a vapor

which is that it must be less than the critical temperature.

Claims 5 and 9

Claims 5 and 9 have been further rejected at 35 USC § 102(b)

as being anticipated by, or in the alternative under 35 USC §

103(a) as obvious over Fournet. This rejection is respectfully

traversed for the reason that both claims 5 and 9 relate to a

perfume which is created by extracting of an essential oil

ingredient. On the other hand, vanillin is not an oil ingredient

extracted from a fragrant wood.   Instead, vanillin as the

dictionary shows, is a sweet smelling, white crystalline needle

soluble in water and alcohol. Applicant respectfully submits that

the claimed oil ingredient is not anticipated nor rendered obvious

by a white crystalline needle.

Allowable Subject Matter

Applicant appreciates the indication of allowable subject

matter in claims 4, 7 and 11. New claims 12 - 14 correspond to

these original claims redrafted in independent form. Allowance is respectfully requested.

In view of the foregoing, it is respectfully submitted that the application is now in condition for allowance, and early action in accordance thereof is requested. In the event there is any reason why the application cannot be allowed in this current condition, it is respectfully requested that the Examiner contact the undersigned at the number listed below to resolve any problems by Interview or Examiner's Amendment.

Respectfully submitted,

Ronald R. Snider
Reg. No. 24,962

Date: March 16, 2004

Snider & Associates
Ronald R. Snider
P.O. Box 27613
Washington, D.C. 20038-7613
(202) 347-2600

RRS/bam

critical moisture content *Chemical Engineering.* the average moisture content throughout a solid material that is in the process of being dried.

critical opalescence *Optics.* opalescence that is caused by strong density fluctuations in a medium near a critical point.

critical path *Industrial Engineering.* in a PERT network, the path representing the most time consumed; equivalent to the total time required for the project.

critical-path method or **technique** *Industrial Engineering.* a project-management system in which all aspects of the project are depicted in a sequence and this data is then translated into a schedule.

critical period or **phase** see SENSITIVE PERIOD.

critical phenomena *Physical Chemistry.* the physical properties, such as temperature and pressure, of liquids and gases at the point when they are about to unite. Also, CRITICAL PROPERTIES.

critical point *Physical Chemistry.* the state at which the properties of the vapor phase of a substance become indistinguishable from those of the liquid phase at the same pressure and temperature, so that the substance exists as a single phase. *Mathematics.* **1.** a critical point of a function f is a point x at which $f'(x)$ is either zero or does not exist. **2.** a critical point of an autonomous system of differential equations is a point at which each of the given differential equations vanishes.

critical point drying *Microbiology.* a procedure used in preparing a specimen for electron microscopic examination, in which damage to the specimen during its drying step is minimized by avoiding exposure to a liquid-gas boundary.

critical potential *Electricity.* a potential across a device that, when exceeded, causes the current through that device to increase sharply. *Atomic Physics.* the amount of energy that is needed to boost an electron to a higher energy level, such as the resonance potential, or to eject it from the atom, such as the ionization potential.

critical pressure *Physical Chemistry.* the pressure associated with the critical point of the liquid-vapor state of a substance; i.e., the pressure of the substance at its critical temperature. *Fluid Mechanics.* the pressure equal to the stagnation pressure multiplied by the quantity $2/(k + 1)$ raised to the $(k/(k-1))$ power, where k is ratio of the specific heat ratio for the gas.

critical pressure ratio *Fluid Mechanics.* the pressure ratio (ratio of freestream pressure to stagnation pressure) at which the flow per unit area is at the maximum.

critical properties see CRITICAL PHENOMENA.

critical radius ratio *Materials Science.* the ratio of the radii of the anions and cation when the anions just touch each other and contact the central cation.

critical range *Metallurgy.* a temperature range in which a solid-state transformation occurs. Also, TRANSFORMATION RANGE.

critical reactor *Nucleonics.* a nuclear reactor in which there is a balance between the number of neutrons produced in fission and the number lost in the reactor by absorption or by leakage from its surface.

critical region *Computer Science.* a region of a process within which it accesses, and usually modifies, a shared variable. If critical regions of multiple processes (involving the same variable) overlap, errors may occur. Also, **critical section**. *Statistics.* see REJECTION REGION.

critical resolved shear stress *Materials Science.* the applied stress resolved in the slip direction in the slip plane of a crystal to initiate plastic flow. It equals the applied stress times the cosines of the angles between the direction of stress application and the normal to the slip plane and the slip direction.

critical Reynolds number *Fluid Mechanics.* the number that corresponds to the transition from laminar flow to turbulent flow as the velocity is increased.

critical shear stress *Materials Science.* the shear stress needed to initiate slip in a given crystal plane and in a given direction.

critical size *Nucleonics.* the physical dimensions of a uranium-moderator system for which the number of neutrons produced by fission is equal to those lost by escape and capture, depending upon the isotopic composition of the uranium, the moderator configuration, and the presence of materials that cause parasitic capture of neutrons.

critical slope *Hydrology.* the slope of a channel or conduit that will produce a critical flow, or a change in the flow of water from laminar to turbulent.

critical solution temperature *Physical Chemistry.* the temperature above which a pair of liquids will dissolve into each other at all proportions. In some cases two liquids also have a lower critical solution temperature and will mix except in a medium temperature range.

critical speed *Aviation.* a speed that is considered highly significant for one reason or another, such as the lowest speed at which an aircraft can become or remain airborne, the speed at which compressibility effects are encountered, or the speed corresponding to a critical Mach number, intolerable buffet, unsatisfactory or unsafe stability, or the like. *Fluid Mechanics.* **1.** a speed for compressible flow that is numerically equal to the square root of the product of the critical temperature, the gas constant R, and the specific heat ratio of the gas k, or the equivalent expression using the stagnation temperature. Also, CRITICAL VELOCITY. **2.** for open channel flow, the speed at which the Froude number becomes numerically equal to unity. *Mechanical Engineering.* the rotational speed of a shaft at which some periodic disturbing force coincides with the natural frequency of the shaft and its attached masses, resulting in dynamic instability.

critical strain *Materials Science.* the minimum strain that is adequate for recrystallization to occur upon subsequent annealing. *Metallurgy.* the strain at the yield point of a metal or alloy.

critical stress intensity *Materials Science.* the maximum stress intensity that a material can tolerate without plastic deformation; a measure of the fracture-toughness of the material. The stress intensity factor, K_I, can be calculated according to the following formula: $K_I = sa\sqrt{pc}$, where s is the stress in the absence of a crack, a is a dimensionless geometric factor, and c is the depth of an edge crack (or half the length of an interior crack).

critical temperature *Physical Chemistry.* the temperature above which a substance has no transition from the liquid to the gaseous phase; that is, the critical temperature of a gas is the highest temperature at which it can be liquefied, regardless of the pressure applied. *Fluid Mechanics.* a temperature equal to the stagnation temperature multiplied by the quantity $2/k + 1$, where k is the specific heat ratio for the gas.

critical value *Mathematics.* a value in the range of a function f corresponding to a critical point in the domain of f. *Statistics.* the value of a test statistic that separates the acceptance and rejection regions in statistical testing.

critical velocity *Physics.* the maximum velocity at which a fluid can flow without becoming turbulent. *Fluid Mechanics.* see CRITICAL SPEED. *Space Technology.* the speed of sound under given conditions at the throat of a rocket nozzle. Also, THROAT VELOCITY.

critical vibration *Mechanical Engineering.* any vibration that may harm a structure.

critical voltage *Electronics.* the highest theoretical value of steady anode voltage, at a given steady magnetic flux density, at which electrons emitted for the cathode at zero velocity would fail to reach the anode in a magnetron. Also, CUTOFF BIAS, CUTOFF VOLTAGE.

critical volume *Physics.* the volume of one mole of a substance when the substance is at critical temperature and critical pressure.

critical weight *Engineering.* the weight added to a bit in a drilling operation that causes the bit to resonate at the angular speed of the rotating shaft. Heavy collars often perform this function.

critical zone *Fluid Mechanics.* the place on a graph where the friction factor versus the Reynolds number shows unstable flow between the transition to turbulent flow and laminar flow. *Ordnance.* the area over which a bomber aircraft must maintain straight, level flight so that the bombsight can be operated properly and the bomb dropped accurately.

crivetz [krə vetz´] *Meteorology.* a cold north-to-east wind in Romania that may occur at any season.

CRM cross-reacting material; cultural resource management.

CRO cathode-ray oscilloscope; cathode-ray oscillograph.

croaker *Vertebrate Zoology.* any of several fishes of the family Sciaenidae that are noted for making a croaking noise, particularly *Micropogonias undulatus,* found off the Atlantic coast of the southern U.S.

Crocco's equation *Fluid Mechanics.* an equation that shows how entropy varies normal to streamline flow; it equates the product of the rate of change of entropy normal to streamlines and the temperature, to the rate of change of stagnation enthalpy normal to streamlines, with the product of vorticity of flow and specific internal energy added to it.

Crocco's theorem *Fluid Mechanics.* a theorem derived from Crocco's equation, stating that if the flow is steady, adiabatic, and irrotational, then it must be isentropic throughout; conversely, if the flow is not isentropic, then it must be irrotational.

Crocco's variables *Fluid Mechanics.* a dependent variable in the momentum integral equation is the shearing stress, designated by the Greek letter τ, and for the independent variables either u/U (specific internal energy divided by internal energy) and x (the distance in the direction of flow) or simply u and x.

van der Waals covolume *Physical Chemistry*. the constant in the van der Waals equation that corrects for the nonnegligible size of the molecules.

van der Waals equation *Physical Chemistry*. an equation of state that describes the behavior of real or nonideal gases by using two corrective terms that take into account the size of the molecules and the forces between them: the term representing the repulsive forces is satisfactory only in the limit of low densities and overestimates their effect at high densities; the term representing the attractive forces is well founded in theory.

van der Waals force(s) *Physical Chemistry*. a general term for those forces of attraction between atoms or molecules that are not the result of chemical bond formation or simple ionic attraction; i.e., the relatively brief and weak interactions that neutral, chemically saturated molecules experience, such as dipole-dipole forces. Also, VAN DER WAALS ATTRACTION, VAN DER WAALS-LONDON INTERACTION(S).

van der Waals-London interaction(s) see VAN DER WAALS FORCE(S).

van der Waals surface tension formula *Thermodynamics*. a relationship between the surface tension of a liquid g and the temperature T: $g = Kp_c^{2/3}T_c^{1/3}(1 - T/T_c)^n$ where K is a constant, p_c is the critical pressure, T_c is the critical temperature, and n is approximately 1.23.

Van Dorn sampler *Engineering*. a sediment sampler that has a plexiglass cylinder sealed at each end with rubber force cups.

vandyke see BROWNLINE.

vandyke brown see BLACK EARTH.

vane *Mechanical Engineering*. a flat or curved surface that moves when exposed to a flow of fluid and rechannels the flow. *Aviation*. any of a wide variety of thin, relatively flat objects designed to align with an airflow; used, for example, to direct airflow, to detect airflow and communicate with a control system, to provide stability for an aircraft, or to direct the flow in an engine, pump, or compressor. *Navigation*. **1.** a long, narrow piece of cloth that indicates the direction of the wind; on smaller vessels it is usually attached to the top of the masthead, while on larger vessels it is often mounted on the side of the ship. **2.** on an azimuth circle or pelorus, a sight that is used to observe the bearing.

Vane, John Robert born 1927, English pharmacologist; shared the Nobel Prize for work in prostaglandins.

vane anemometer *Engineering*. a portable instrument, in which a number of vanes radiate from a shared shaft, which rotates when facing the wind; used to measure low air and wind speeds in large ducts.

vane-anode magnetron *Electronics*. a magnetron containing plane-parallel walls between adjacent cavities.

vane-type instrument *Engineering*. an instrument in which the pointer is moved by either the force of repulsion between fixed and moveable magnetized vanes or the force between a coil and a pivoted vane-shaped piece of soft iron.

Vaneyellidae *Invertebrate Zoology*. a family of sea cucumbers, holothurian echinoderms in the order Dactylochirotida, with fingerlike tentacles.

Vanguard *Space Technology*. any of a series of three geodesical satellites launched by the United States in 1958 and 1959 as a part of the International Geophysical Year program.
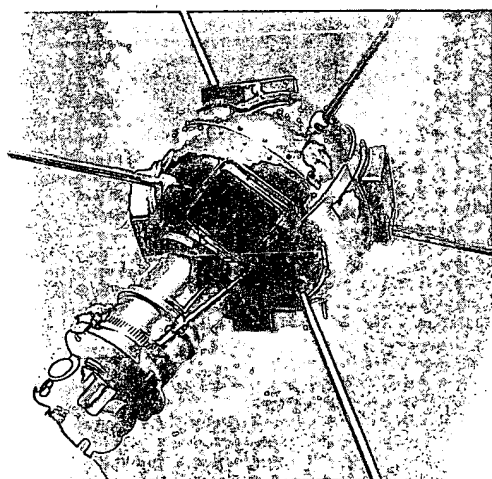
Vanguard

van Helmont, Johann Baptista 1579–1644, Belgian alchemist; coined the term *gas*; isolated oxides from air; proposed pathogenic theory of disease.

vanilla *Botany*. a tropical orchid of the genus *Vanilla*, especially *Vanilla planifoli*, that bears a podlike fruit. *Food Technology*. **1.** the fruit of this plant. Also, **vanilla bean. 2.** an extract made with dried, fermented vanilla beans; used in flavoring foods and in perfumes. *Computer Programming*. **1.** relating to a computer system that is very general in its application or relatively uncomplicated. **2.** a version of a computer system or program prior to enhancements or upgrades.

vanillin *Organic Chemistry*. $C_8H_8O_3$, sweet-smelling, white crystalline needles; somewhat soluble in water and alcohol; melts at 81–83°C; used in perfumes, flavorings, pharmaceuticals, as a reagent, and as a source of L-dopa. Also, **vanillic aldehyde.**

vanish *Mathematics*. a function or operator that equals zero at some point of its domain is said to vanish at that point.

vanishing line *Photogrammetry*. the unique straight line on an aerial photograph that contains all the vanishing points of all the systems of parallel lines that are parallel to a single plane.

vanishing point *Mathematics*. in a perspectivity, a point at which the lines joining corresponding points intersect. *Photogrammetry*. the point in the plane of a photograph at which a system of parallel lines in the object space converge.

vanishing tide *Oceanography*. a tide in which the water level remains at a stand for several hours instead of rising or falling continuously in the normal pattern, so that the tide seems to disappear.

vannus *Entomology*. the fanlike posterior or anal lobe of an insect's wing, differentiated from the rest of the wing by a furrow.

vanoxite *Mineralogy*. a rare, weakly radioactive, inadequately described, black mineral with an approximate formula of $V_4^{+4}V_2^{+5}O_{13}$ ·$8H_2O$, occurring as microscopic crystals and in massive form; found replacing wood and cementinc sandstone in the Colorado plateau area.

van pool *Transportation Engineering*. a work-oriented ride-sharing service, often using a company van and an employee as a regular driver.

V antenna *Electromagnetism*. a directional antenna having a pair of radiating elements forming a V and fed at the apex.

van't Hoff, Jacobus [van täf´] 1852–1911, Dutch chemist; developed the theory of stereochemistry; awarded the Nobel Prize for laws of dilute solutions and chemical thermodynamics.

van't Hoff equation *Physical Chemistry*. an equation that accounts for the effect of temperature on the equilibrium constant in a gaseous reaction when pressure remains constant. Also, **van't Hoff isochore.**

van't Hoff factor *Physics*. the proportionality constant that appears between the observed osmotic pressure and the pressure predicted by ideal conditions; given by the osmotic pressure divided by the quantity of the gas constant times the temperature divided by the volume.

van't Hoff formula *Organic Chemistry*. the formula of calculation stating that the number of stereoisomers of a sugar molecule is equal to 2^n, with n equal to the number of asymmetric carbon atoms.

van't Hoff isotherm *Physical Chemistry*. an equation that shows the change in free energy during a chemical reaction.

vanthoffite *Mineralogy*. $Na_6Mg(SO_4)_4$, a colorless monoclinic mineral occurring in massive form, having a specific gravity of 2.694 and a hardness of 3.5 on the Mohs scale; found in oceanic salt deposits.

van't Hoff's law *Physics*. a law stating that a dissolved substance exerts the same osmotic pressure as it would if it were an ideal gas that occupied the same volume as the container.

Van Vleck, John H. 1899–1980, American physicist; worked in magnetism; awarded the Nobel Prize for his research on electron correlation.

Van Vleck equation *Quantum Mechanics*. an equation giving the paramagnetism of a magnetically susceptible substance.

Van Vleck paramagnetism *Quantum Mechanics*. the paramagnetism of a collection of ions, atoms, or molecules as predicted by quantum theory.

vapor *Physical Chemistry*. a gas whose temperature is less than the critical temperature, so that it may be liquefied or solidified by compression at constant temperature; i.e., a dispersion in air of molecules of a substance that is a liquid or a solid in its normal state, such as water vapor.

vapor-compression cycle *Mechanical Engineering*. a complete cooling cycle in which the refrigerant is first made to boil, producing a cooling effect, and then recompressed into its liquid state.

vapor concentration see ABSOLUTE HUMIDITY.

vapor cycle *Thermodynamics*. a thermodynamic cycle that operates on a substance that is at all times in its vapor phase, or at least passes through the vapor phase during a portion of the cycle.